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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/310,256 05/12/99 CHIN

S TSMC98-574

EXAMINER

IM52/0228

GEORGE O SAILE
20 MCINTOSH DRIVE
POUGHKEEPSIE NY 12603

AHMED, S
ART UNIT

PAPER NUMBER

3

1746
DATE MAILED:

02/28/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/310,256

Applicant(s)

CHIN ET AL.

Examiner

Shamim Ahmed

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: ____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: in the specification page 10, the brief description of figures 1-4 is not proper because each figure has to explain individually such as figure 1 includes figures 1a –1e each has to explain individually, see MPEP 608.01(f).

Appropriate correction is required.

Drawings

2. Figures 1a –1e should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Claim Rejections - 35 USC § 112

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 2 recites the limitation "to the ICP coil" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claim 1- 3 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Blanchard et al (USP 5,221,425).

Blanchard et al disclose a method for reducing the foreign particles during a reactive ion etching process by gradually reducing the radio frequency (RF) voltage to a minimum voltage in a series of steps (col.2, lines 19-40 and 60-68).

Blanchard et al also disclose that gradually reducing the RF voltage to zero results in the least amount of foreign matter onto the substrate and the reduction of the power is done by incrementally reducing the power in a series of steps, wherein at least five steps are used to reduce the power to test five groups of substrates for measuring the content of the foreign particles (col.5, lines 34-43 and lines 64-col.6, lines 2).

Blanchard et al further, disclose that the plasma gases can be removed from the chamber by means of a vacuum pump (col.4, lines 48-51).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchard et al (USP 5,221,425).

Blanchard et al discussed in the above paragraph No. 4 but Blanchard et al do not disclose that the reactive ion etch (RIE) chamber could be inductive coupled plasma

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(ICP) dry-etch chamber. Blanchard et al's method includes gradually reducing the RF voltage applied to the cathode. So, it would have been obvious to one skill in the art to use ICP dry-etch chamber because it would provide the same benefit.

As of claims 7-14, 16 and 17 : Blanchard et al disclose at least five steps are used to reduce the RF power for reduction of particles from the plasma chamber (col.5, lines 34-43 and lines 64-col.6, lines 2) but fail to teach the RF power supplied is gradually reduced in a sequence of six steps or in a sequence of N steps. It would have been obvious to one skill in the art to have six steps or N number of steps in the power reduction process because this is an obvious process variation unless applicants show that exactly six steps are critical for the process.

As of claims 4 and 20, it would have obvious to have a photolithography mask on the Blanchard 's substrate because forming pattern on the silicon wafers or plasma etching of wafer substrates are well known to have photographic mask.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gupta et al (USP 5,622,595) discloses that it is well known to reduce the particles in the plasma chamber by lowering or reducing the RF power slowly (col.1, line 64-col.2, lines 7). Gupta (6,139,923) discloses a method for reducing particle contamination in a substrate-processing chamber; wherein RF power and also the pressure could be reduced (col.8, lines 50-59). Ye et al (5,756,400) disclose a method for cleaning by-products from the plasma chamber utilizing certain halogenated cleaning gases.

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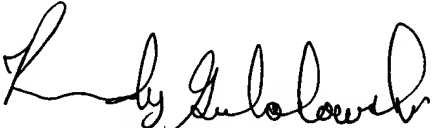
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (703) 305-1929. The examiner can normally be reached on M-F (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (703) 308-4333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Shamim Ahmed
Examiner
Art Unit 1746

SA
February 22, 2001


RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700